

## **AMENDMENTS TO THE CLAIMS**

1. (Currently Amended) A process for inhibiting misincorporation of a terminator in a single base primer extension reaction, comprising:

providing a product of a nucleic acid synthesis reaction, the product comprising a nucleic acid template and a quantity of inorganic pyrophosphate;

incubating the product and an inorganic pyrophosphatase under conditions sufficient to decrease the quantity of inorganic pyrophosphate, to yield a purified reaction product;

combining the purified reaction product, a primer, a terminator having a detectable label, and a polymerase to form a mixture; and

incubating the mixture under conditions sufficient to extend the primer by addition of the terminator in a single base primer extension reaction, wherein decreasing the quantity of inorganic pyrophosphate in the product of a nucleic acid synthesis reaction inhibits pyrophosphorolysis in the single base primer extension reaction, so as to inhibit misincorporation of a terminator.

2. (Original) The process of claim 1 wherein the nucleic acid synthesis product further comprises a residual reaction component selected from the group consisting of: a residual primer and a nucleotide.

3. (Previously Presented) The process of claim 2 further comprising:  
adding an enzyme selected from the group consisting of: an exonuclease, an alkaline phosphatase, and a combination thereof to the nucleic acid synthesis product; and

incubating the nucleic acid synthesis product and enzyme under conditions sufficient to degrade the residual reaction component.

4. (Currently Amended) The process of claim 2 further comprising:  
adding an enzyme selected from the group consisting of: an exonuclease, an alkaline phosphatase, and a combination thereof to the purified reaction product; and  
incubating the ~~nucleic acid synthesis~~ purified reaction product and enzyme under conditions sufficient to degrade the residual reaction component.

5. (Previously Presented) The process of claim 3 further comprising:  
inactivating the enzyme.

6. (Previously Presented) The process of claim 1 further comprising inactivating the inorganic pyrophosphatase.

7. (Original) The process of claim 1 wherein the detectable label is a fluorescent label.

8. (Canceled)

9. (Previously Presented) The process of claim 1 further comprising detecting the detectable label.

10. (Original) The process of 9 wherein the step of detecting the label comprises detection of fluorescence polarization.

11-12 (Canceled)

13. (Previously Presented) The process of claim 3 wherein the alkaline phosphatase is selected from the group consisting of: bacterial alkaline phosphatase, calf intestinal alkaline phosphatase and a combination thereof.

14. (Previously Presented) The process of claim 3 wherein the alkaline phosphatase is shrimp alkaline phosphatase.

15. (Previously Presented) The process of claim 3 wherein the exonuclease is selected from the group consisting of: lambda exonuclease, mung bean exonuclease, Bal31 exonuclease, T7 exonuclease and a combination thereof.

16. (Previously Presented) The process of claim 3 wherein the exonuclease is exonuclease I.

17. (Canceled)

18. (Original) The process of claim 1 wherein the polymerase is a thermostable polymerase having a greater affinity for an acyclo nucleoside terminator than for a dideoxyterminator.

19-20 (Canceled)

21. (Original) The process of claim 1 wherein the steps are performed in a single reaction container.

22. (Canceled)

23. (Original) The process of claim 1 wherein the terminator is an acyclo nucleoside terminator.

24. (Canceled)

25. (Canceled)

26. (Currently Amended) A process for inhibiting misincorporation of a terminator in a single base primer extension reaction, comprising:

providing a product of a nucleic acid synthesis reaction, the product comprising a nucleic acid template and a quantity of inorganic pyrophosphate;

incubating the product and a pyrophosphate removing enzyme under conditions sufficient to decrease the quantity of inorganic pyrophosphate, to yield a purified reaction product;

combining the purified reaction product, a primer, a terminator having a detectable label, and a polymerase to form a mixture; and

incubating the mixture under conditions sufficient to extend the primer by addition of the terminator in a single base primer extension reaction, wherein decreasing the quantity of inorganic pyrophosphate in the product of a nucleic acid synthesis reaction inhibits pyrophosphorolysis in the single base primer extension reaction, so as to inhibit misincorporation of a terminator.

27. (Original) The process of claim 26 wherein the nucleic acid synthesis product further comprises a residual reaction component selected from the group consisting of: a residual primer and a nucleotide.

28. (Previously Presented) The process of claim 27 further comprising:  
adding an enzyme selected from the group consisting of: an exonuclease, an alkaline phosphatase, and a combination thereof to the nucleic acid synthesis product; and  
incubating the nucleic acid synthesis product and enzyme under conditions sufficient to degrade the residual reaction component.

29. (Currently Amended) The process of claim 27 further comprising:  
adding an enzyme selected from the group consisting of: an exonuclease, an alkaline phosphatase, and a combination thereof to the purified reaction product; and

incubating the ~~nucleic acid synthesis~~ purified reaction product and enzyme under conditions sufficient to degrade the residual reaction component.

30. (Currently Amended) The process of claim 26 further comprising inactivating the ~~inorganic pyrophosphatase~~ pyrophosphate removing enzyme.

31. (Canceled)

32. (Canceled)

33-63 (Canceled)